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MEMORANDUM

DATE: June 10, 2015

TO: Eric Nuchims, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-4 Chemist, E & E, Seattle, Washington

SUBJ: **Organic Data Quality Assurance Review, John Day Vapor Response Site, John Day, Oregon**

REF: TDD: 15-05-0005 PAN: 1004530.0004.111.02

The data quality assurance review of eight water samples collected from the John Day Vapor Response site in John Day, Oregon, has been completed. Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270D SIM) was performed by TestAmerica, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered:

15053105	15053106	15053108	15053109
15053112	15053110	15053113	15053107

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of < 6°C. The samples were collected between May 29 and 31, 2015, were extracted on June 3, 2015, and were analyzed on June 6, 2015, therefore meeting holding time criteria of less than 7 days between collection and extraction and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) were within the QC limits.

4. Continuing Calibration: Acceptable.

All RRFs were within the QC limits. All % differences were within the QC limits.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. System Monitoring Compounds (SMCs): Acceptable.

All SMC recoveries were within QC limits.

7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except acenaphthylene with low recoveries in the BS and BSD; associated positive results and sample quantitation limits were qualified as estimated with a low bias (JL or UJL).

8. Duplicate Analysis: Acceptable.

Blank spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits.

9. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

Pyrene (sample 15013105), phenanthrene (sample 15053106), and 2-methylnaphthalene (sample 15053107) were qualified as not detected (U) based on rinsate blank results.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.

JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.

JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.

JQ – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).

N - The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Client: Ecology and Environment, Inc. Job Number: 580-50365-1

Client Sample ID: 15053105

Lab Sample ID: 580-50365-2 Date Sampled: 05/29/2015 1216
Client Matrix: Water Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C011.D
Dilution:	1.0			Initial Weight/Volume:	1055.5 mL
Analysis Date:	06/06/2015 1943			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	7.3		0.0068	0.019
2-Methylnaphthalene	6.4		0.0057	0.025
1-Methylnaphthalene	5.0		0.0057	0.019
Acenaphthylene	0.025 JL	*	0.0057	0.019
Acenaphthene	0.088		0.0057	0.019
Fluorene	0.14		0.0057	0.019
Phenanthrene	0.19		0.0057	0.019
Anthracene	ND		0.0057	0.019 U
Fluoranthene	ND		0.0057	0.019 U
Pyrene	0.022 U		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019 U
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	94		64 - 150

6/10/15

Client: Ecology and Environment, Inc.

Job Number: 580-50365-1

Client Sample ID: 15053106

Lab Sample ID: 580-50365-3
Client Matrix: Water

Date Sampled: 05/29/2015 1617
Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C012.D
Dilution:	1.0			Initial Weight/Volume:	982.4 mL
Analysis Date:	06/06/2015 2005			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.30		0.0073	0.020
2-Methylnaphthalene	0.18		0.0061	0.026
1-Methylnaphthalene	0.13		0.0061	0.020
Acenaphthylene	ND	*	0.0061	0.020
Acenaphthene	ND		0.0061	0.020
Fluorene	0.0065	J	0.0061	0.020
Phenanthrene	0.0091	J	0.0061	0.020
Anthracene	ND		0.0061	0.020
Fluoranthene	ND		0.0061	0.020
Pyrene	ND		0.0061	0.020
Benzo[a]anthracene	ND		0.0061	0.020
Chrysene	ND		0.0061	0.020
Benzo[b]fluoranthene	ND		0.0061	0.020
Benzo[k]fluoranthene	ND		0.0061	0.020
Benzo[a]pyrene	ND		0.0061	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0061	0.020
Dibenz(a,h)anthracene	ND		0.0061	0.020
Benzo[g,h,i]perylene	ND		0.0061	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	98		64 - 150

6/10/15

Client: Ecology and Environment, Inc. Job Number: 580-50365-1

Client Sample ID: 15053108

Lab Sample ID: 580-50365-4 Date Sampled: 05/30/2015 1130
Client Matrix: Water Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C013.D
Dilution:	1.0			Initial Weight/Volume:	1054.1 mL
Analysis Date:	06/06/2015 2027			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ND		0.0068	0.019
2-Methylnaphthalene	ND		0.0057	0.025
1-Methylnaphthalene	ND		0.0057	0.019
Acenaphthylene	ND	*	0.0057	0.019
Acenaphthene	ND		0.0057	0.019
Fluorene	ND		0.0057	0.019
Phenanthrene	ND		0.0057	0.019
Anthracene	ND		0.0057	0.019
Fluoranthene	ND		0.0057	0.019
Pyrene	ND		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	94		64 - 150

6/9/15

Client: Ecology and Environment, Inc.

Job Number: 580-50365-1

Client Sample ID: **15053109**

Lab Sample ID: 580-50365-5
Client Matrix: Water

Date Sampled: 05/30/2015 1428
Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C014.D
Dilution:	1.0			Initial Weight/Volume:	1049.7 mL
Analysis Date:	06/06/2015 2049			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ND		0.0069	0.019
2-Methylnaphthalene	ND		0.0057	0.025
1-Methylnaphthalene	ND		0.0057	0.019
Acenaphthylene	ND	*	0.0057	0.019
Acenaphthene	ND		0.0057	0.019
Fluorene	ND		0.0057	0.019
Phenanthrene	ND		0.0057	0.019
Anthracene	ND		0.0057	0.019
Fluoranthene	ND		0.0057	0.019
Pyrene	ND		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	98		64 - 150

Client: Ecology and Environment, Inc.

Job Number: 580-50365-1

Client Sample ID: **15053112**

Lab Sample ID: 580-50365-6
Client Matrix: Water

Date Sampled: 05/31/2015 1111
Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C015.D
Dilution:	1.0			Initial Weight/Volume:	1048.6 mL
Analysis Date:	06/06/2015 2110			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ND		0.0069	0.019
2-Methylnaphthalene	ND		0.0057	0.025
1-Methylnaphthalene	ND		0.0057	0.019
Acenaphthylene	ND	*	0.0057	0.019
Acenaphthene	ND		0.0057	0.019
Fluorene	ND		0.0057	0.019
Phenanthrene	ND		0.0057	0.019
Anthracene	ND		0.0057	0.019
Fluoranthene	ND		0.0057	0.019
Pyrene	ND		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	90		64 - 150

6/10/15

Client: Ecology and Environment, Inc. Job Number: 580-50365-1

Client Sample ID: 15053110

Lab Sample ID: 580-50365-7 Date Sampled: 05/30/2015 1748
Client Matrix: Water Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C016.D
Dilution:	1.0			Initial Weight/Volume:	1055.8 mL
Analysis Date:	06/06/2015 2132			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ND		0.0068	0.019
2-Methylnaphthalene	ND		0.0057	0.025
1-Methylnaphthalene	ND		0.0057	0.019
Acenaphthylene	ND	*	0.0057	0.019
Acenaphthene	ND		0.0057	0.019
Fluorene	ND		0.0057	0.019
Phenanthrene	ND		0.0057	0.019
Anthracene	ND		0.0057	0.019
Fluoranthene	ND		0.0057	0.019
Pyrene	ND		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	96		64 - 150

6/10/15

Client: Ecology and Environment, Inc.

Job Number: 580-50365-1

Client Sample ID: **15053113**

Lab Sample ID: 580-50365-8
Client Matrix: Water

Date Sampled: 05/31/2015 1433
Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C017.D
Dilution:	1.0			Initial Weight/Volume:	1054.3 mL
Analysis Date:	06/06/2015 2154			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	ND		0.0068	0.019
2-Methylnaphthalene	ND		0.0057	0.025
1-Methylnaphthalene	ND		0.0057	0.019
Acenaphthylene	ND	*	0.0057	0.019
Acenaphthene	ND		0.0057	0.019
Fluorene	ND		0.0057	0.019
Phenanthrene	ND		0.0057	0.019
Anthracene	ND		0.0057	0.019
Fluoranthene	ND		0.0057	0.019
Pyrene	ND		0.0057	0.019
Benzo[a]anthracene	ND		0.0057	0.019
Chrysene	ND		0.0057	0.019
Benzo[b]fluoranthene	ND		0.0057	0.019
Benzo[k]fluoranthene	ND		0.0057	0.019
Benzo[a]pyrene	ND		0.0057	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0057	0.019
Dibenz(a,h)anthracene	ND		0.0057	0.019
Benzo[g,h,i]perylene	ND		0.0057	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	91		64 - 150

JL

6/10/15

Client: Ecology and Environment, Inc.

Job Number: 580-50365-1

Client Sample ID: **15053107**

Lab Sample ID: 580-50365-9
Client Matrix: Water

Date Sampled: 05/31/2015 1100
Date Received: 06/02/2015 0945

8270D SIM Semivolatile Organic Compounds (GC/MS SIM)

Analysis Method:	8270D SIM	Analysis Batch:	580-191434	Instrument ID:	TAC023
Prep Method:	3520C	Prep Batch:	580-191118	Lab File ID:	0606C018.D
Dilution:	1.0			Initial Weight/Volume:	979.7 mL
Analysis Date:	06/06/2015 2216			Final Weight/Volume:	2.0 mL
Prep Date:	06/03/2015 1647			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.014	J	0.0073	0.020
2-Methylnaphthalene	~~0.0091~~	~~J~~	0.0061	0.027 U
1-Methylnaphthalene	ND		0.0061	0.020 U
Acenaphthylene	ND	*	0.0061	0.020 JL
Acenaphthene	ND		0.0061	0.020
Fluorene	ND		0.0061	0.020
Phenanthrene	ND		0.0061	0.020
Anthracene	ND		0.0061	0.020
Fluoranthene	ND		0.0061	0.020
Pyrene	ND		0.0061	0.020
Benzo[a]anthracene	ND		0.0061	0.020
Chrysene	ND		0.0061	0.020
Benzo[b]fluoranthene	ND		0.0061	0.020
Benzo[k]fluoranthene	ND		0.0061	0.020
Benzo[a]pyrene	ND		0.0061	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0061	0.020
Dibenz(a,h)anthracene	ND		0.0061	0.020
Benzo[g,h,i]perylene	ND		0.0061	0.020

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14	97		64 - 150

6-10-15